

MAIL TO:

STATE OF UTAH
DIVISION OF PURCHASING
3150 STATE OFFICE BUILDING, CAPITOL HILL
P.O. BOX 141061
SALT LAKE CITY, UTAH 84114-1061
TELEPHONE (801) 538-3026
<http://purchasing.utah.gov>

Invitation to BidSolicitation Number: **EN5512**Due Date: **10/05/04 at 2:00 PM**

Date Sent: September 14, 2004

Goods and services to be purchased: **MOBILE LIFTING SYSTEMS****Please complete**

Company Name		Federal Tax Identification Number	
Ordering Address	City	State	Zip Code
Remittance Address (if different from ordering address)	City	State	Zip Code
Type <input type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Proprietorship <input type="checkbox"/> Government	Company Contact Person		
Telephone Number (include area code)	Fax Number (include area code)		
Company's Internet Web Address	Email Address		
Discount Terms (for bid purposes, bid discounts less than 30 days will not be considered)	Days Required for Delivery After Receipt of Order (see attached for any required minimums)		
<p>The following documents are included in this solicitation: Solicitation forms, instructions and general provisions, and specifications. <u>Please review all documents carefully before completing.</u></p> <p>The undersigned certifies that the goods or services offered are produced, mined, grown, manufactured, or performed in Utah. Yes _____ No _____. If no, enter where produced, etc. _____</p>			
Offeror's Authorized Representative's Signature		Date	
Type or Print Name		Position or Title	

**STATE OF UTAH
DIVISION OF PURCHASING
GENERAL SERVICES**

Invitation to Bid

Solicitation Number: EN5512

Due Date: 10/05/04@2:00PM

Vendor Name:

Item#	Qty	Unit	Description	Unit Price	Extension
001	1	LOT	THIS BID WILL RESULT IN INSTALLING NEW MOBILE LIFTING SYSTEMS AT VARIOUS UDOT LOCATIONS AS PER ATTACHED SPECIFICATIONS.	\$	\$
002	1	LOT	THIS BID WILL RESULT IN INSTALLING NEW MOBILE LIFTING SYSTEMS AT VARIOUS UDOT LOCATIONS AS PER ATTACHED SPECIFICATIONS.	\$	\$
003	1	LOT	THIS BID WILL RESULT IN INSTALLING NEW MOBILE LIFTING SYSTEMS AT VARIOUS UDOT LOCATIONS AS PER ATTACHED SPECIFICATIONS.	\$	\$

Changes or modifications to this bid:

Any changes or modifications to this solicitation will only be accomplished in written addendum sent from the division of purchasing. Any other form is not binding. Bidders submitting a bid on any information other than which is contained in this solicitation document, or any addendum thereto, do so at their own risk.

For Technical questions, contact Debra Boulton at 801-965-4070.

For Purchasing questions, contact Eula Neel at 801-538-3145.

Reference RX# 810 55200000003.

Ship To: VARIOUS LOCATIONS

FREIGHT CHARGES (if applicable)

SHIPPING POINT AND ZIP CODE	
SHIPPING WEIGHT	
MODE OF TRANSPORTATION (Please check one) <input type="checkbox"/> Small package/Ground <input type="checkbox"/> LTL(Less than truck load) <input type="checkbox"/> Truckload <input type="checkbox"/> Air <input type="checkbox"/> Other (Please specify) NMFC Class # _____ NMFC Item # _____	
TOTAL PRICE LESS FREIGHT (FOB Origin)	\$
TOTAL PRICE INCLUDING FREIGHT (FOB Destination)	\$

INVITATION TO BID - INSTRUCTION AND GENERAL PROVISIONS

1. BID PREPARATION: (a) All prices and notations must be in ink or typewritten. (b) Price each item separately. Unit price shall be shown and a total price shall be entered for each item bid. Errors may be crossed out and corrections printed in ink or typewritten adjacent and must be initialed in ink by person signing quotation. (c) Unit price will govern, if there is an error in the extension. (d) Delivery time is critical and must be adhered to as specified. (e) Wherever in this document an item is defined by using a trade name of a manufacturer and/or model number, it is intended that the words, "or equivalent" apply. "Or equivalent" means any other brand that is equal in use, quality, economy and performance to the brand listed as determined by the Division of Purchasing & General Services (DIVISION). If the vendor lists a trade name and/or catalog number in the bid, the DIVISION will assume the item meets the specifications unless the bid clearly states it is an alternate, and describes specifically how it differs from the item specified. All bids must include complete manufacturer's descriptive literature if quoting an equivalent product. All products are to be of new, unused condition, unless otherwise requested in this solicitation. (f) By signing the bid the vendor certifies that all of the information provided is accurate, that they are willing and able to furnish the item(s) specified, and that prices quoted are correct. (g) This bid may not be withdrawn for a period of 60 days from bid due date.

2. SUBMITTING THE BID: (a) The bid must be signed in ink, sealed in a properly-addressed envelope, and either mailed or delivered to the DIVISION OF PURCHASING, 3150 State Office Building, Capitol Hill, Salt Lake City, UT 84114-1061 by the "Due Date and Time." **The "Bid Number" and "Due Date" must appear on the outside of the envelope.** (b) Bids, modifications, or corrections received after the closing time on the "Due Date" will be considered late and handled in accordance with the Utah Procurement Rules, section R33-3-109. (c) **Your bid will be considered only if it is submitted on the forms provided by the state. Facsimile transmission of bids to DIVISION will not be considered.** (d) All prices quoted must be both F.O.B. Origin per paragraph 1.(c) and F.O.B. Destination. Additional charges including but not limited to delivery, drayage, express, parcel post, packing, cartage, insurance, license fees, permits, costs of bonds, or for any other purpose must be included in the bid for consideration and approval by the DIVISION. Upon award of the contract, the shipping terms will be F.O.B. Destination, Freight Prepaid with freight charges to be added to the invoice unless otherwise specified by the DIVISION.

3. SOLICITATION AMENDMENTS: All changes to this solicitation will be made through written addendum only. Bidders are cautioned not to consider verbal modifications.

4. PROPRIETARY INFORMATION: Suppliers are required to mark any specific information contained in their bid which is not to be disclosed to the public or used for purposes other than the evaluation of the bid. Each request for nondisclosure must be accompanied by a specific justification explaining why the information is to be protected. Pricing and service elements of any bid will not be considered proprietary. Bids submitted may be reviewed and evaluated by any persons at the discretion of the state.

5. SAMPLES: Samples of item(s) specified in this bid, when required by DIVISION, must be furnished free of charge to DIVISION. Any item not destroyed by tests may, upon request made at the time the sample is furnished, be returned at the bidder's expense.

6. WARRANTY: The contractor agrees to warrant and assume responsibility for all products (including hardware, firmware, and/or software products) that it licenses, contracts, or sells to the State of Utah under this contract for a period of one year, unless otherwise specified and mutually agreed upon elsewhere in this contract. The contractor (seller) acknowledges that all warranties granted to the buyer by the Uniform Commercial Code of the State of Utah applies to this contract. Product liability disclaimers and/or warranty disclaimers from the seller are not applicable to this contract unless otherwise specified and mutually agreed upon elsewhere in this contract. In general, the contractor warrants that: (1) the product will do what the salesperson said it would do, (2) the product will live up to all specific claims that the manufacturer makes in their advertisements, (3) the product will be suitable for the ordinary purposes for which such product is used, (4) the product will

be suitable for any special purposes that the State has relied on the contractor's skill or judgement to consider when it advised the State about the product, (5) the product has been properly designed and manufactured, and (6) the product is free of significant defects or unusual problems about which the State has not been warned. Remedies available to the State include the following: The contractor will repair or replace (at no charge to the State) the product whose nonconformance is discovered and made known to the contractor in writing. If the repaired and/or replaced product proves to be inadequate, or fails of its essential purpose, the contractor will refund the full amount of any payments that have been made. Nothing in this warranty will be construed to limit any rights or remedies the State of Utah may otherwise have under this contract.

7. DIVISION APPROVAL: Purchase orders placed, or contracts written, with the state of Utah, as a result of this bid, will not be legally binding without the written approval of the director of the DIVISION.

8. AWARD OF CONTRACT: (a) the contract will be awarded with reasonable promptness, by written notice, to the lowest responsible bidder that meets the specifications. Consideration will be given to the quality of the product(s) to be supplied, conformity to the specifications, the purpose for which required, delivery time required, discount terms and other criteria set forth in this invitation to bid. (b) The bids are opened publicly in the presence of one or more witnesses. the name of each bidder, and the amount of the bid is recorded. Each bid, and the record, is open to public inspection. (c) The DIVISION may accept any item or group of items, or overall low bid. the DIVISION has the right to cancel this invitation to bid at any time prior to the award of contract. (d) The DIVISION can reject any and all bids. And it can waive any informality, or technicality in any bid received, if the DIVISION believes it would serve the best interest of the State. (e) Before, or after, the award of a contract the DIVISION has the right to inspect the bidder's premises and all business records to determine the holder's ability to meet contract requirements. (f) DIVISION does not guarantee to make any purchase under awarded contract(s). Estimated quantities are for bidding purposes only, and not to be interpreted as a guarantee to purchase any amount. (g) Utah has a reciprocal preference law which will be applied against bidders bidding products or services produced in states which discriminate against Utah products. For details see Section 63-56 20.5 -20.6, Utah Code Annotated.

9. ANTI-DISCRIMINATION ACT: The bidder agrees to abide by the provisions of the Utah Anti-discrimination Act, Title 34 Chapter 35, U.C.A. 1953, as amended, and Title VI and Title VII of the Civil Rights Act of 1964 (42 USC 2000e), which prohibit discrimination against any employee or applicant for employment, or any applicant or recipient of services, on the basis of race, religion, color, or national origin; and further agrees to abide by Executive Order No. 11246, as amended, which prohibits discrimination on the basis of sex; 45 CFR 90 which prohibits discrimination on the basis of age, and Section 504 of the Rehabilitation Act of 1973 or the Americans with Disabilities Act of 1990, which prohibits discrimination on the basis of disabilities. Also bidder agrees to abide by Utah's Executive Order, dated March 17, 1993, which prohibits sexual harassment in the workplace. Vendor must include this provision in every subcontract or purchase order relating to purchases by the State of Utah to insure that the subcontractors and vendors are bound by this provision.

10. DEBARMENT: The CONTRACTOR certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract) by any governmental department or agency. If the CONTRACTOR cannot certify this statement, attach a written explanation for review by the STATE.

11. GOVERNING LAWS AND REGULATIONS: All state purchases are subject to the Utah Procurement Code, Title 63 Chapter 56 U.C.A. 1953, as amended, and the Procurement Regulations as adopted by the Utah State Procurement Policy Board. These are available on the Internet at www.purchasing.utah.gov

(Revision 14 Mar 2003 - IFB Instructions)

STATE OF UTAH
DEPARTMENT OF TRANSPORTATION
FACILITIES MAINTENANCE

NEW MOBILE LIFTING SYSTEM

STATION 3421, EUREKA - UDOT JOB NUMBER 81L53703
STATION 3435, ROOSEVELT - UDOT JOB NUMBER 81L53703
STATION 4322, LONG VALLEY JUNCTION - UDOT JOB NUMBER 81L54355
STATION 4332, HANKSVILLE - UDOT JOB NUMBER 81L54355
STATION 4423, MONTICELLO - UDOT JOB NUMBER 81L54456

PROJECT DESCRIPTION

This project is to provide a new mobile lifting systems at various UDOT locations per this description and the attached specifications.

Potential bidders may wish to visit the sites. Site visits can be arranged through the individual station supervisors. Contact information for the station supervisors is as follows.

Eureka	Glen Wahlberg	(435) 433-6911
Roosevelt	Fred Priebe	(435) 722-2942
Long Valley	Raleigh Franklin	(435) 648-2398
Hanksville	Steve Hatch	(435) 542-3486
Monticello	Victor Shafer	(435) 587-2620

Questions during the bid period can be addressed to William E. Juszczak, UDOT Facilities Manager, phone number, (801) 964-4522. All questions are required to be submitted 10 working days prior to the bid date.

STATE OF UTAH
DEPARTMENT OF TRANSPORTATION
FACILITIES MAINTENANCE

SPECIFICATION FOR NEW MOBILE LIFTING SYSTEM
UDOT STATION 3421 EUREKA, UTAH
UDOT STATION 3435 ROOSEVELT, UTAH
UDOT STATION 4322 LONG VALLEY JUNCTION, UTAH
UDOT STATION 4332 HANKSVILLE, UTAH
UDOT STATION 4423 MONTICELLO, UTAH

10 August 2004

GENERAL SPECIFICATIONS

BID

BIDDER _____

Submit Utah *INVITATION TO BID* with all required information.

Having examined the Contract Documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, I/We hereby propose to furnish all labor, materials, and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. The price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this proposal is a part.

I/We acknowledge receipt of the following Addenda: _____
For all work shown on the Drawings, described in the Specifications and Contract Documents and as described herein, I/we agree to perform the all of the work indicated for the sum of:

Eureka Base Bid

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Eureka Option 1

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Eureka Option 2

Specifications - Mobile Lifting System

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Roosevelt Base Bid

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Roosevelt Option 1

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Roosevelt Option 2

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Long Valley Base Bid

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Long Valley Option 1

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Long Valley Option 2

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Hanksville Base Bid

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Hanksville Option 1

_____ Dollars (\$) _____
(In case of discrepancy, written amount shall govern)

Hanksville Option 2

Specifications - Mobile Lifting System

_____ Dollars (\$_____))
(In case of discrepancy, written amount shall govern)

Monticello Base Bid

_____ Dollars (\$_____))
(In case of discrepancy, written amount shall govern)

Monticello Option 1

_____ Dollars (\$_____))
(In case of discrepancy, written amount shall govern)

Monticello Option 2

_____ Dollars (\$_____))
(In case of discrepancy, written amount shall govern)

Multiple Unit Price Discount

State discount of above quoted price (in percent) for purchase of multiple units and terms under which discount is applied.

TIME OF COMPLETION AND DELAY REMEDY

The lifts shall be delivered to the sites within sixty (60) calendar days after the date of the Notice to Proceed. Contractor agrees to pay liquidated damages in the amount of \$100 per day for each day after the expiration of the Contract Time until the Contractor achieves Substantial Completion.

PAYMENT

Final payment will be made when the lifts are delivered, set up by the supplier and approved by the Owner.

For prompt payment, mail invoice to:

William E. Juszczak
Facilities Manager
UDOT Maintenance Division
Box 148250
Salt Lake City, Utah 84114-8250

Specifications - Mobile Lifting System

WARRANTY

Contractor shall provide a general written warranty for the replacement of all defective materials, including labor and travel that are used in this project. Period of warranty shall be as outlined in the specification.

SCOPE OF WORK

Provide, deliver and install mobile lifting system consisting of one primary jack and 3 secondary jacks (a set) as specified herein. Provide deliver and install one set at each of the locations listed.

DETAIL SPECIFICATIONS

SPECIFICATIONS FOR MOBILE ELECTRO-HYDRAULIC JACKS

1.0 GENERAL DESCRIPTION

1.1 The purpose of these specifications is to define a mobile wheel contact lifting system to elevate large buses, trucks, and other vehicles for the purpose of inspection, maintenance, servicing and cleaning.

One lifting system or set for single chassis vehicles shall consist of primary and secondary jacks with the main difference being that a primary jack shall have the power supply connection and shall have the capability of being designated as a primary or secondary jack. A lifting system consisting of one primary and 1, 2, 3, 4, or 5 secondary jacks is called a "set". Normally, a set shall consist of 4 jacks; one primary and 3 secondary jacks. The lift system shall be designed as to permit combining sets to a system of jacks (called a "system") consisting of 2, 3 or more sets without modifications to the electric or mechanical configuration of the jacks. **The lift system shall be interchangeably designed as to be able to handle up to 32 columns in a lifting system, with the possibility of operating one column, one axle (up to a maximum of 16 axles) or all columns together, at the same time, without the activation of switches.**

1.2 All jacks shall be operated synchronously from any of the control panels on any of the jacks. Individual operation shall be obtained by activating a set reference button on any one of the columns and at the same time pressing either the up or down button. Paired operation shall be obtained by activating an "axle" button on any one of the pairs and at the same time pressing either the up or down button on the opposing column. Selector switches shall not be permitted since they can be switched inadvertently without the principal operator being aware.

1.3 Primary control panels shall have the option of being designated to operate as either primary or secondary columns. This shall allow the possibility of operating two separate

Specifications - Mobile Lifting System

pairs of two with separate power controls (thereby permitting operation in geographically distant areas); one complete set of four or individual columns.

1.4 The base shall be of a rectangular design with mitered rear corners to permit narrow turning radius. The design shall be rectangular so as to provide maximum rigidity and balance during lifting operation. Triangularly designed bases shall not be acceptable due to inherent instability.

1.5 Lifting column shall not weigh more than 1050 lbs. to facilitate movement.

1.6 Lifting carriage shall be made from one rectangular tube and shall fit with minimum clearance in the U-shaped column to provide the maximum protection against pinching and shearing of fingers and hands.

1.7 Entire lift system shall be approved and certified by the ALI (Automotive Lift Institute) certification program for automotive lifts and shall meet the requirements inherent in the testing of the program, including mechanical as well as electrical testing. Proof of certification as well as testing report showing testing at the certified capacity of the lift must be submitted with bid at the time of bid. ETL is an ALI sponsored independent nationally recognized testing laboratory (NRTL) approved by OSHA. [ETL, an independent NRTL administers the ALI certification program.]

1.8 Manufacturer of lifting system shall have been certified ISO 9001. ISO 9001 certification shall accompany the bid.

1.8.1 Manufacturer shall be a member, in good standing, of the Automotive Lift Institute (ALI), a professional association of lift manufacturers.

1.9 Column shall be structurally designed as to have motor and hydraulic pump assembly positioned in the center of the column to promote greater stability while moving the column. Lift systems with motors mounted on the top of the column shall not be accepted due to their inherent top-heaviness and possibility of tipping while moving.

1.9.1 Lift system shall operate at the following voltages without motor replacement or external modification: 208, 220, 230, 240, 400, 460, 480 volts at 60 Hertz.

1.9.2 Electrical system shall meet the requirements of:

Generic emission standard

- EN 55011 Group 1 Class B

Conducted emission: 9kHz-30 MHz (on power leads)

Radiated emission: 30-1000 MHz (electromag. emm.)

Specifications - Mobile Lifting System

Generic immunity standard

- IEC 801-2 (1991) level 4: Electrostatic discharge applied to control box and touchable parts.
- IFC 801-3 (1992) level 3: Radiated immunity, electric field: 1-1000 MHz to control box.
- IFC 801-4 (1998) level 3: H.F. impulse disturbance injected on mains and I/O leads.
- IF 801-5 (1998) level 3: Conducted immunity 9kHz-8, high energy, impulse disturbances injected on mains and I/O leads.
- IFC 801-6 (1992) level 3: Conducted immunity 9kHz-80 MHz; electromagnetic energy injected on mains and interconnecting cables.

These standards shall be required to provide for trouble free operation of the micro-processor.

2.0 LIFTING CAPACITY

2.1 Each jack shall have a normal nominal rated capacity of 18,000 lbs. per jack; 36,000 lbs., per pair or 72,000 lbs. per set of four columns.

3.0 LIFTING AND COLUMN HEIGHT

3.1 The lifting height of each fork shall be no less than 69 inches as measured from the ground to the bottom of the lifting fork.

3.2 Column height shall not be greater than 102”.

4.0 LIFTING TIME

4.1 Lifting time shall not be greater than 89 seconds in both the ascent and descent mode.

5.0 TIRE SIZE

5.1 Wheel contact forks shall freely accept tire sizes between R 17 to R 24.5 inclusive. Clear distance between forks shall range between 9 3/8” and 22” and the forks shall be adjustable by hand. Fork length shall not be less than 14 inches.

Specifications - Mobile Lifting System

6.0 ENVIRONMENT

6.1 Electrical and hydraulic equipment shall be suitable for all-weather use indoors and outdoors and shall be specifically designed to be able to operate outdoors on a continual basis not an occasional basis. All controls shall be waterproof with cables connected.

6.2 Control panel shall be supplied with female connector sealing caps to render system waterproof when lifts are not being used and cables are disconnected.

7.0 PALLET JACK MECHANISM

7.1 A pallet jack mechanism shall be used to move the lifting column. It shall be attached by two wheels to permit maximum rear stabilization for the lifting column.

7.2 Pallet jack mechanism shall have three positions: lift position; neutral position, and lower position and shall have a loop type handle. T-bar handles are not acceptable since they do not facilitate proper handling of the mobile column.

7.3 Pallet jack mechanism shall have a maximum pressure valve which automatically lowers the pallet jack when the load on the column exceeds 1,100 lbs. This shall be demonstrable.

7.4 Pallet jack mechanism shall have a gas shock incorporated into the pallet jack which shall serve to dampen shocks as the mobile column is rolled across the floor as well as to prevent overloading.

8.0 WHEELS

8.1 Retractable wheel design shall be integrated into the base frame to improve stability of columns. Wheels shall retract into underside of column base when vehicle load is vertically applied to columns. As a result there shall be no wheel contact with concrete when columns are in raised position.

8.2 Floor pressure requirement shall not be greater than 900 psi.

9.0 CONTROLS

9.1 The various functions of the mobile lifting system shall be controlled from the control panels on the columns.

9.2 Each control panel whether it is designated as a primary or secondary column control panel shall have an emergency stop switch which stops all movement, either ascent

Specifications - Mobile Lifting System

or descent within 1/300th of one second after activation. The emergency stop switch must be palm operated and shall require counterclockwise motion in order to be released.

9.3 Each control box (primary and secondary) shall at least contain identically:

- * control panel
- * an “up” button
- * a “down” button
- * an emergency stop switch (palm operated) which shall require counterclockwise motion in order to release.
- * printed circuit board
- * motor relays for all input voltages
- * transformer for all voltages and 24 volt output for the control circuit
- * reserve fuses
- * connectors for connector cable; input and output
- * lock to prevent unauthorized entry into box
- * a “set reference” button
- * a “main power indicator light” button
- * a “control power indicator light” button
- * a “lock release” button
- * a “set axle” button

9.3.1. Each primary column electrical panel designated as the primary shall contain the following as a minimum:

- * power supply cable
- * main selector switch

Specifications - Mobile Lifting System

- * safety devices
- * 3 phase controller

9.4 Each control box shall be lockable by the use of a specially designed key to permit authorized entry into the control panels.

9.5 Each control panel shall have a “set reference” function which allows:

- * the setting of the control power (see main power indicator light)
- * the setting of the height memory
- * the operation on an individual basis of each column

9.5.1 The main switch shall set and illuminate the main power indication light. The setting of the control power and the proper phasing shall be accomplished with the “set reference” button. The “set reference:” button shall be so configured as to illuminate three buttons (up, down, and unlock) in rapid flashing sequence. This shall indicate that the phasing is incorrect. The “set reference” button shall be configured to permit illumination of the main power indicator light and the control voltage indicator light assuming that the phases were properly set the first time.

9.5.2 The “set reference” button shall also serve to set memory height. The actual height of each column shall be stored in the height memory function. When all the columns are raised at the same height, the height memory shall ensure that all columns lift to the same height. The height memory function shall provide for the safe lifting of vehicles that have different lifting points (e.g., trailer to be lifted by the wheels and by the chassis).

9.5.3 The “set reference” button shall permit individual column operation by holding the “set reference” button at the same time that the “up” or “down” button are engaged.

9.6 Control voltage in each box shall not exceed 24 Volts.

9.7 The electrical connection shall be a closed loop with three possible configurations.

9.8 Interconnecting cables shall be of a heavy -duty type minimum thickness .75 inches with special construction to permit operator to run over cable when positioning vehicles. Cable shall be reinforced hybrid cable with wires for power and data transmission and wires for safety control loop to connect jacks in a closed circuit.

Specifications - Mobile Lifting System

9.9 Connecting cables shall be quickly and easily disconnectable from either side of the electrical panels. Lift systems which utilize a hard wired connecting cable into the control panel shall not be acceptable.

9.10 Control panels shall utilize a printed circuit board and micro-processor to permit operation of the lift. PCB shall have LED lights which facilitate trouble-shooting. LED indications modes shall be no less than 10 which indicate possible fault and remedy. The various fault modes shall be laminated on the inside of the control box for easy readability and easy access.

9.11 Lift system shall not draw more than 26 Amperes (at 220 volts) per set of four (4) columns under full load conditions.

9.12 Paired or axle operation shall be possible with an even number of columns. Axle operation shall be engaged by pressing one of the "set axle" buttons of one of the columns designated for the paired operation. After a three (3) second interval the "set axle" button shall activate a blinking sequence. At this point, the "set axle" button of the control box opposite the column shall be engaged within 30 seconds. By pressing the "set axle" button the operating system shall automatically select all the other axles in the system and set the columns of these axles as pairs. Selector switches for paired operation shall not be acceptable due to the possibility of inadvertent switching by other operators in the shop.

9.13 Paired or axle operation shall be permitted from any height position of the lifting column(s). Moreover, it shall be possible to switch back and forth from, and to individual operation, synchronous operation (all columns), or paired operation in any order regardless of physical position or height setting of the columns or paired operation in any order regardless of physical position or height setting of the columns or in other words **at every height.**

9.14 Control system shall utilize a micro-processor integrated within the printed circuit board to provide various safety and operational requirements described above. The control system's adaptive leveling function shall be provided by an analog measuring device, such as potentiometers. Encoders or other systems that utilize PLC's (programmable logic controllers) shall not be acceptable since they do not measure absolute limits.

9.15 For ease of maintenance, the entire printed circuit board shall be removable and replaced in less than five (5) minutes.

9.16 Control panel shall be rated NEMA 4, as NEMA 4 is more stringent than NEMA 12.

10.0 DRIVE MECHANISM

Specifications - Mobile Lifting System

10.1 The drive system shall be hydraulic drive and shall permit lifting without any pulsation, jerks, or unsteady lifting. Lifting shall be smooth. Hydraulic system shall comprise an electrically-powered pump, flow control valves, and a fluid reservoir.

10.2 Hydraulic lifting cylinder shall be of piston type to prevent leakage in case of piston damage. Piston shall be mounted to the floor.

10.3 The removal and installation of the lifting cylinder shall take place in less than 40 minutes per column.

10.4 Hydraulic fluid shall be contained in a galvanized hydraulic tubing. Hydraulic hoses shall never be permitted to prevent leakage.

10.5 Lifting carriage shall ride on durable oil filled nylon guide rollers. Guide rollers shall require no lubrication and no maintenance. Guide rollers made of hard steel or any other steel type shall not be accepted.

10.6 In order to promote optimal distribution of stresses from the carriage to the column, the vertical distance between the guide wheels shall be at least 35" (from center to center).

10.7 Carriage shall have a 1/4-inch clearance from the floor in the retracted position, to enhance mobility when power is cut-off.

10.8 Jacks shall be equipped with an electronic and redundant mechanical end stop to limit the lifting height. The system shall be so designed that end stops in the lowest position are not required due to the environmental conditions (dirt, etc.).

10.9 The hydraulic unit shall come equipped with 2/2 valves. Servo-valves shall not be acceptable.

10.9.1 Hydraulic lifting cylinder shall be equipped with an excluder to remove dirt, dust and other contaminants on the plunger.

10.9.2 Each hydraulic cylinder shall be equipped with a hose burst check valve to prevent decent in the event of a major fluid leak.

10.9.3. Piston shall be chromium plated for low abrasion conditions and to prevent slip-stick problems.

11.0 SAFETY DEVICES

11.1 An independent and fail-safe mechanical safety device shall be present on each column. This safety device shall be totally independent from the lifting drive system.

Specifications - Mobile Lifting System

Systems that utilize non-load bearing “safety nuts” shall not be approved since they are integrated with the lifting drive itself.

11.1.2 A locking “pawl and ratchet” system shall be used to insure proper and automatic locking at any position either in the ascent or descent mode. The locking notches shall be integrated into the guide block and the locking pawl shall be wedged against the lifting fork. The mechanical safety lock shall automatically engage when the lift is not operating (either in the descent or ascent mode).

11.1.3 A solenoid valve shall release the locking pawl when the lift is in operation.

11.1.4 Increments on carriage safety ladder shall not be greater than 1 ¼”.

11.2 Motive “up” and “down” push buttons shall be of a “dead-man” type design insuring constant pressure on the button by the operator in order to operate the lift system.

11.3 Cable holding bracket shall be of steel construction to provide safe storage of cables when unit is not in operation. Power cables shall not be less than 60 feet in length. Interconnecting cables between columns shall not be less than 39 feet in length.

11.4 All control voltage shall be no greater than 24 volts.

11.5 Emergency release of the columns shall facilitate lowering of columns manually. Manual lowering shall be accomplished without use of cranks.

11.6 For safe and unmistakable operation, the operating system shall be equipped with an analogue measuring device. Increment encoders are not permitted, since the signal is not unmistakable and can give unsafe operating conditions.

The analogue measuring device shall provide for automatic leveling and synchronization. This system shall insure that the lift system raises and lowers at the same time. The automatic leveling system shall operate within the full range of synchronized operation, paired operation, and height memory operation (when operating columns with varying heights).

11.6.2 If, during the lifting or lowering, the height of the columns becomes unsynchronized or the forks are at different lifting height from one another the automatic leveling system shall operate in the following manner:

* If the difference is greater than 5/8 inch but less than 1 3/16” then an additional relief valve in the hydraulic system shall open until the difference in the columns has been eliminated. Or, in other words, the system shall automatically compensate and shall automatically regulate the differences.

Specifications - Mobile Lifting System

* If the difference is greater than $1 \frac{3}{16}$ " but less than $2 \frac{3}{8}$ " then the lowering of the columns is blocked since this usually denotes a lifting fork obstruction. Lifting of the system shall be permitted since the additional relief valve in the hydraulic system shall be opened.

* If the difference is greater than $2 \frac{3}{8}$ " between lifting forks then all movement ceases requiring investigation as to cause.

11.6.3 The operating system shall have a fault indication system. Fault indication shall be provided by a visual order of 4 LED's, mounted on the control board inside the control box. The various fault sequences (minimum 11) shall be laminated on the inside of the control box for easy readability and identification.

12.0 MAINTENANCE

12.1 The mobile lift system shall essentially be a maintenance free lifting system. Only requirements shall be monthly and yearly visual checks to insure that the hydraulic fluid levels are correct and that emergency release mechanisms as well as mechanical safety locks are operating in a proper fashion.

12.2 The mobile lift system shall not need to have hydraulic oil replaced in increments of less than two (2) years.

12.3 There shall be no external grease or oil reservoir to fill.

13.0 WARRANTY AND SPECIAL REQUIREMENTS

13.1 Lift system shall be warranted for a minimum period of two (2) years and the hydraulic cylinder shall be warranted for a minimum period of five (5) years. Guide rollers shall be warranted for life.

13.2 Manufacturer must guarantee, in writing, spare parts availability for twenty-five (25) years from date of delivery of the lift system.

Option 1

Four support stands, 15,000 lbs capacity each, with cradle support pad.

Option 2

Four reduction sleeves (for smaller tire diameter).

Delivery

Specifications - Mobile Lifting System

Delivery is to be made within 60 days of notice to proceed. Delivery must include:

1. Dealer's invoice
2. Copy of warranty
3. Operations Manual

Deliver one set to each of the sites. Station locations are as follows.

Station 3421 - 574 East Main, Eureka, Utah

Station 3435 - West Highway 40 (milepost 115), Roosevelt, Utah

Station 4322 - SR-89 (milepost 103.6, junction with SR-14), Long Valley Junction,
Utah

Station 4332 - 362 West 100 North, Hanksville, Utah

Station 4423 - 701 East Highway 491, Monticello, Utah